

What is claimed is:

1. A gain module comprising:
a plurality of optical fibers which differ from each other with respect to
the composition of their respective optical regions and through which signal
lights are amplified by stimulated Raman scattering; and
one or more pump light sources which supply pump light for Raman
amplification to each of said plurality of optical fibers.

2. A gain module according to Claim 1, wherein the difference of Stokes
shift quantity of said plurality of optical fibers is equal to or more than 200 cm⁻¹.

3. A gain module according to Claim 1, wherein the difference of Stokes
shift quantity of said plurality of optical fibers is equal to or more than 400 cm⁻¹.

4. A gain module according to Claim 1, wherein said plurality of optical
fibers are connected in series.

5. A gain module according to Claim 1, wherein said plurality of optical
fibers are connected in parallel.

6. A gain module according to Claim 1, wherein said one or more pump
light sources supply each of said plurality of optical fibers with pump light of a
substantially identical wavelength.

7. A gain module according to Claim 1, wherein pump light that has
been output from one pump light source is supplied to said plurality of optical
fibers.

8. A gain module according to Claim 1, wherein said pump light source

09929503-081501

SA

supplies pump light of a different wavelength to each of said plurality of optical fibers.

9. A gain module according to Claim 1, wherein the optical region of at least one of said plurality of optical fibers is doped with GeO_2 .

10. A gain module according to Claim 1, wherein the optical region of at least one of said plurality of optical fibers is doped with P_2O_5 .

11. A Raman amplifier comprising:

a plurality of optical fibers which differ from each other with respect to the composition of their respective optical regions and through which signal lights are amplified by stimulated Raman scattering;

one or more pump light sources which supply pump light for Raman amplification to each of said plurality of optical fibers; and

a control unit.

12. An optical communication system comprising optical transmission lines installed in station sections and one or more pump light sources that supply pump light for Raman amplification to the optical transmission lines;

said optical transmission lines comprising a plurality of optical fibers the optical regions of which differ from each other with respect to their composition and through which signal lights are amplified by stimulated Raman scattering.

13. An optical communication system comprising:

a plurality of optical fibers which differ from each other with respect to the composition of their respective optical regions and through which signal lights are amplified by stimulated Raman scattering; and

09529503-081501
TOSTED-ED562560

a pump light source for supplying pump light for Raman amplification to each of said plurality of optical fibers, said plurality of optical fibers and said pump light source being located at a station.

09929503-081501